DOCUMENT RESUME

ED 427 615 HE 031 865

AUTHOR Volkwein, J. Fredericks; Cabrera, Alberto F.
TITLE Antecedents and Consequences of Classroom Experiences among Students Who Enter as Freshmen. ASHE Annual Meeting Paper.
PUB DATE 1998-11-00
NOTE 14p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (23rd, Miami, FL, November 5-8, 1998).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classroom Environment; College Environment; College Freshmen; Effective Schools Research; Higher Education; Outcomes of Education; *Student Attitudes; Student Characteristics; Student Interests; Student Surveys; *Teacher Student Relationship
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

This study examined the characteristics and factors in the undergraduate experience that appeared to be most strongly associated with vitality in the classroom. Data were collected from 740 representative freshmen at a large research university by means of a university survey instrument that contained over 150 items in four categories: (1) background information on student age, class year, sex, ethnicity, employment, admissions status, major, financial aid, residence, Scholastic Assessment Test scores, and high school grade point average and class rank; (2) student plans, goals, and reasons for attendance; (3) level of student satisfaction with campus services and facilities, as well as with the institution's academic, administrative, and social climate; and (4) cognitive and noncognitive experiences and outcomes, including classroom experiences, faculty contact, course-taking patterns, graduation plans, loan indebtedness, and self-reported growth. Regression analysis of the data indicated that the most beneficial classroom experiences were reported by students who perceived high levels of faculty concern and interaction with faculty, who were actively engaged in the academic and social structure of the institution, and who observed a campus climate of racial harmony and political tolerance. Two tables summarize the variables used and the multivariate data. (Contains 52 references.) (CH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

HE

ED 427 615

Antecedents and Consequences of Classroom Experiences Among Students Who Enter As Freshmen

J. Fredericks Volkwein
Director and Senior Scientist
Center for the Study of Higher Education
403 S. Allen St., Suite 104
Pennsylvania State University
University Park, PA 16801-5252
(814) 865-6346
E-Mail: VOLKWEIN@PSU.EDU

Alberto F. Cabrera
Associate Professor
Pennsylvania State University

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

ASHE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ABSTRACT

Since the classroom experience is central to the purpose of educational institutions, we need to examine those factors that exert positive and negative influences upon it. The data in our study contain measures that reflect an array of concepts from the literature, including pre-college traits and achievement, academic and social integration, student effort, encouragement of family and friends, financial need and ability to pay, and racial and political campus climate. The most beneficial classroom experiences are reported by students who perceive high levels of faculty concern, who report interaction with faculty, who report their own active engagement in the academic and social structures of the institution, and who observe a campus climate of racial harmony and political tolerance.

HE031 865

Paper presented at the ASHE Annual Meeting, Miami, FL, November 1998. The authors deeply appreciate the technical assistance provided by Jeffrey Gerken, Doctoral Student, University at Albany.

BEST COPY AVAILABLE

ASHE *Association for the Study of Higher Education*

Headquartered at the University of Missouri-Columbia • College of Education • Department of Educational Leadership and Policy Analysis • 211 Hill Hall, Columbia, MO 65211 • 573-882-9645 • fax 573-884-5714

This paper was presented at the annual meeting of the Association for the Study of Higher Education held in Miami, Florida, November 5-8, 1998. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Student Measures Associated with Favorable Classroom Experiences

The Research and Policy Problem

The undergraduate classroom represents the formal structure in collegiate organizations where learning officially takes place. Nevertheless, the literature on outcomes assessment rarely focuses on the vitality of this experience explicitly. The Pascarella and Terenzini classic volume on how college affects students (1991) presents and discusses the existing array of theories and models of student change, and while several models note the importance of faculty and student interaction, explicit attention to the classroom is either absent or not at all prominent in the discussion. Indeed, most of the empirical studies that provide support for the models by Pace, by Tinto, by Bean, and by Cabrera and their associates, focus as much on advising and study habits and faculty-student interaction *outside* the classroom, as they do on the dynamics *within* the classroom.

In using these models to examine a variety of desirable student outcomes, Volkwein and his research colleagues in several studies have found that the classroom experience is the single most important influence explaining many aspects of student growth and satisfaction (Volkwein et al., 1986; Volkwein, 1991; Volkwein & Carbone 1994; Volkwein & Lorang, 1996). Terenzini's NCTLA model (1995) is the first to explicitly identify classroom experiences as having a prominent role in producing learning outcomes. In their recent studies at the NCTLA, Pascarella and Terenzini and their research colleagues have now begun to incorporate measures of course learning, instructor effectiveness, and other academic experiences into their examination of learning outcomes (Terenzini et al., 1995, 1996; Pascarella et al. 1996). At least two of these studies (Terenzini et al., 1995; Pascarella et al. 1996) have found that measures of instructor organization, skill, clarity, and support have exerted significant influences on student outcomes. Pace and Kuh and their research colleagues in each new edition of the CSEQ have been increasing the number of items that solicit information about student study habits and classroom learning behaviors (Kuh, Pace & Vesper, 1997).

Given the importance of the classroom experience, both conceptually and empirically, this study examines the undergraduate characteristics and factors in the undergraduate experience that appear to be the most strongly associated with vitality in the classroom, as reported by students.

Conceptual Frameworks Used in this Study

There are at least three major assertions regarding the nature of adjustment to college. The most traditional view is that academic preparedness for college and clear goals are the main factors accounting for differences in persistence behavior, academic performance, and other educational outcomes (Feldman & Newcomb, 1969).

A second group of alternative yet complementary perspectives fall under the general description of student-institution fit models (Pascarella & Terenzini, 1991). Perhaps the most widely researched of these models claims that student persistence and growth depends on the degree of successful integration into the academic and social structures of the institution (Spady 1970, 1971). Tinto has advanced this model and elaborated on it with the additional claim that successful adjustment to college involves severing ties with family and past communities in order to successfully integrate the student into the new academic community (1987, 1994) . Another complementary perspective focuses on the importance of student involvement and effort (Astin 1984, Pace 1984). Others argue that support from friends and family are important enhancements to college adjustment (Bean 1980; Bean and Metzner 1985; Nora 1987; Nora et al. 1990). Yet another branch of this literature emphasizes the importance of financial variables and the student's ability to pay (Cabrera et al. 1990; St. John, 1994). Most of these models have been constructed to explain one outcome -- student persistence; but some researchers have successfully used these and similar models to explain other outcomes like student growth and satisfaction (Pascarella, 1985; Volkwein et al., 1986; Volkwein, 1991; Kuh, et al., 1997).

A third set of assertions rest on the role that perceptions of prejudice and discrimination play in student adjustment. Exposure to a campus climate of prejudice and discrimination has gained increased attention as a factor accounting for the differences in persistence rates between minorities and non-minorities (e.g. Fleming, 1984; Hurtado, 1992, 1994; Hurtado, Carter & Spuler, 1996; Smedley, Myers & Harrel, 1993). Many authors argue that intolerance towards minority students establishes a climate of racial prejudice and discrimination that permeates both academic and social interactions, and thus figures prominently in explaining their maladjustment with the institution (Hurtado, 1992, 1994; Hurtado, Carter & Spuler, 1996; Loo & Rolison, 1986; Murguia, Padilla, & Pavel, 1991). The resulting low involvement with the different campus communities impinges on the minority student's cognitive and affective development as well as persistence (Fleming, 1984; Loo & Rolison, 1986; Smith, 1989, 1992; Tracey and Sedlacek 1984,1985,1987; Suen, 1983; Loo and Rolison 1986). Not all studies have supported these claims (Arbona and Novy 1991; Nettles, Thoeny and Gosman 1986; Cabrera and Nora 1994), and there is at least preliminary evidence that perceptions of prejudice and racial disharmony affect White and minority students alike (Nora & Cabrera, 1996).

Since the classroom experience is central to the purpose of educational institutions, we need to examine those factors that exert positive and negative influences upon it.

Methodology

The data in our study contain measures that reflect an array of concepts from the above literature, including pre-college traits and achievement, academic and social integration, student effort, encouragement of family and friends, financial need and ability to pay, and racial and political campus climate. The study is conducted at a research university with a matriculated undergraduate population of about 10,000 students. The data are collected on a survey instrument that is part of the University's on-going assessment program and contains over 150 items of information in four categories:

1. Background information about age, class year, sex, ethnicity, employment, admissions status, type of enrollment, major, financial aid, and residence. In addition, we obtained information from the admissions system on SAT scores, high school GPA and rank in class.

2. Student plans, goals, and reasons for attendance.

3. Levels of Student satisfaction with an array of campus services and facilities, as well as with various aspects of the institution's academic, administrative, and social environments or climates.

4. A variety of cognitive and non-cognitive experiences and outcomes, including classroom experiences, faculty contact, course taking patterns, graduation plans, anticipated loan indebtedness, Grade Point Average (GPA), and self-reported growth.

The multivariate analysis for this study is conducted on 740 representative undergraduates who entered the university as freshmen (non transfers), and who responded to recent undergraduate outcomes surveys. The 740 are representative with respect to age, ethnicity, and admissions profile. Females are slightly over-represented among the respondents. While not every undergraduate field of study is present in the sample, the 15 largest majors are represented in approximate proportion to their numbers in the undergraduate student body. Table 1 lists the variables that are assembled for the OLS regression model. Our regression analysis uses a conservative approach by employing listwise deletion of cases and omitting students over the age of 25.

Dependent Variable

This research focuses on the classroom experiences reported by respondents to the university's outcomes survey. The dependent variable is a scale of classroom experiences developed by Terenzini and his colleagues (1980, 1982, 1984, 1987), and enhanced by Volkwein and his colleagues (1991, 1994, 1996) [alpha=.88]. This is a seven-item scale on which students report the extent to which they have classes in which they are intellectually challenged, learn something new, are given stimulating assignments, etc. [Students respond on a five-point scale: 1=rarely/never, 2=less than half the time, 3=about half the time, 4=more than half the time, 5=almost always.]

Independent Variables

The variables and scales used in the analysis are shown in Table 1. They draw directly upon the constructs from the literature in general, and from the Cabrera and Tinto Models in particular. The pre-college demographic and academic ability measures include ethnicity, gender, high school grades and SAT. The measures listed in the table for academic integration(faculty and effort), social integration(peer), campus climate(tolerance and prejudice), encouragement(family and friends), and economic factors(financial difficulty and work-study) are borrowed not only from Cabrera's work (1992, 1993), but also from studies by Pascarella and Terenzini, 1982; Terenzini, et al., 1982, 1984; Nora 1987; Nora, et al. 1990; Volkwein, et al., 1986; Volkwein 1991; Volkwein & Carbone, 1994; and Volkwein & Lorang, 1996. The alpha reliabilities for the six multi-item scales used in these other studies are recalculated for this population; and as shown in Table 1, all exceed .80.

Results and Conclusion

The results of our analysis are shown in Table 2. None of the pre-college measures reflecting student characteristics and prior achievement are significant. Ethnicity, sex, high school performance, and SAT scores apparently are unrelated to the vitality of the classroom experiences reported by students at this university. Even class year, friends, family, and finances are not influential. The significant beta weights are attached to the variables reflecting faculty concern (.474) and faculty contact (.093), racial and political tolerance (.107), student effort (.233), and peer interactions and friendships (.094). The adjusted R-square exceeds .43, which is quite strong.

Thus, the most beneficial classroom experiences are reported by students who report the highest levels of academic integration in the form of faculty concern and contact with students and the student's own academic effort and engagement. Of significant, but secondary importance as influences on the classroom experience are the students social integration as reflected in the scale of peer relations and the scale of racial harmony and political tolerance.

The prominent roles of faculty concern and student effort are consistent with several branches of the literature and with an array of other studies (see for example, Pascarella & Terenzini, 1991; Kuh, Pace & Vesper, 1997; Volkwein 1991). Indeed, a favorable classroom experience and faculty respect for students and student effort may all mutually reinforce each other. We remain surprised that such mutual reinforcement does not seem to occur more frequently among the most talented students in this population, nor more frequently in classes attended by juniors and seniors than by freshmen and sophomores.

Given the discussions in the literature, we expected to observe significant influences by the variables reflecting gender, financial need and ability to pay, and prior achievement and ability. However, these variables are not influential with this population. We are *not* surprised by the non-significance of gender because other studies at this particular university have found

few male-female differences. We are surprised, however, that the economic variables do not intrude into the classroom and influence the quality of that experience. Apparently, these students do not take their financial problems into the classroom. In addition, it seems logical that the better students (measured by SAT scores and high school grades) should report more favorable classroom experiences than other students, but we did not find this to be the case. Classroom experiences thus appear to be independent of student talent, but not of student effort.

The non-significance of ethnicity challenges some of the statements in the literature about the permeability of discrimination throughout all aspects of the undergraduate experience. We did not find it even when we used each of the separate racial groups as dummy variables in the analysis. Additionally, the scale of racial harmony and political tolerance in our study exerts a significant *positive* influence on the classroom environment, whereas perceptions of prejudice are non-significant and *negative*. This invites closer examination in a population that contains a greater number of minorities.

Thus, in this study we have explored a number of student variables that the literature suggests might influence the classroom experience. The most beneficial classroom experiences are reported by students who perceive high levels of faculty concern and interaction with students, who report their own active engagement in the academic and social structures of the institution, and who observe a campus climate of racial harmony and political tolerance. Such findings are congruent with the mainstream of the research literature, as well as with the literature emphasizing principles of good practice (Chickering & Gamson, 1987; NCES, 1991; Pace, 1987). In fact, these findings are entirely consistent with the research efforts by Pace and Kuh to identify measures of student-faculty contact, active learning, and cooperation among students (Kuh, et al., 1997).

This line of research is important because of the current national interest in the undergraduate experience and the instructional contributions that faculty make. Our dependent variable -- which we believe reflects classroom vitality -- is a scale of items that reflect the presence in the classroom of well-prepared, caring, and interesting instructors who give meaningful assignments, according to the students. Thus, our classroom scale emphasizes faculty *behaviors*, rather than faculty *characteristics*. Apparently these faculty behaviors not only stimulate student learning, but also overcome student differences in race, sex, financial need, and family background -- differences that under conditions of good teaching are left at the classroom door.

Future research on this topic should incorporate measures that reflect additional aspects of the students and their undergraduate experiences. Moreover, student interactions in the classroom need to be measured more precisely and elaborately, perhaps differentiated by academic discipline. Even more importantly, the connections among various undergraduate experiences and subsequent educational outcomes need additional scrutiny. What happens in the classroom is central, but which learning activities produce the most favorable outcomes, and do these influences vary by institution type? We hope to undertake some structural equation modeling using a multi-campus dataset.

Table 1. Descriptive statistics

Variables & Scales	Count	%	Mean	S.D.	Alpha
Demographics					
A. Ethnicity					
White	493	76.7	-	-	-
Minority	150	23.3	-	-	-
B. Gender					
Female	440	59.1	-	-	-
Male	304	40.9	-	-	-
Academic Ability					
High School GPA	-	-	87.81	4.46	-
SAT	-	-	1,085.73	130.5	-
Class Year		51.0			
Upper division	356	49.0			
Lower division	371				
Encouragement					
Family			4.14	1.09	
Friends			3.66	1.18	
Economic Factors					
Financial difficulty			3.02	1.31	
Work study					
Yes	152	20.3			
No	598	79.7			
Faculty					
Faculty contact			2.88	1.27	
Faculty concern			3.41	0.83	.80
Social Integration					
Peer interactions			4.07	.97	.86
Involvement/Effort					
Academic effort			3.56	1.03	.83
Campus Climate					
Tolerance			3.38	.73	.81
Prejudice			3.21	.89	.83
Classroom Experiences			3.54	.74	.88

Table 2. Multivariate statistics

Variables & Scales	Classroom Experiences Beta
Demographics:	
White	.004
Female	.000
Academic Ability:	
High School GPA	-.052
SAT	.000
Class year:	
Upper Division	.024
Encouragement:	
Family	-.051
Friends	.043
Economic Factors:	
Financial difficulty	.020
Work Study	-.036
Faculty:	
Faculty contact	.093**
Faculty concern	.474**
Social Integration:	
Peer interactions	.094**
Involvement/Effort:	
Academic effort	.233**
Campus Climate:	
Tolerance	.107**
Prejudice	-.005
Classroom Experiences	
Measures of Fit:	
R^2	.449**
$R^2_{adjusted}$	.431**
F	24.97**

This study at a research university suggests, however, that student holistic assessments of the undergraduate classroom experience are significantly linked to student perceptions about campus climate, especially those aspects of campus climate reflecting faculty concern for students, positive peer interactions, harmony and tolerance, and student engagement. This strongly suggests a campus agenda that encourages faculty attentiveness, student academic and social engagement, and tolerance among all members of the campus community.

References

Arbona, C. & Novy, D.M. (1990). Noncognitive dimensions as predictors of college success among Black, Mexican-American and White students. *Journal of College Student Development*, 31: 415-421.

Astin, A. (1984). Student involvement: A developmental theory for higher education. *Journal for Higher Education Bulletin*, 38:11-12.

Bean, J.P. (1980). Dropouts and turnover: The synthesis and test of a casual model of student attrition. *Research in Higher Education*, 12: 155-187.

Bean, J.P. and Metzner B.S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Higher Educational Research*, 55(4): 485-540.

Cabrera, A. F. & Nora, A. (1994). College students' perceptions of prejudice and discrimination and their feelings of alienation. *Review of Education, Pedagogy, and Cultural Studies*, 16, 387-409.

Cabrera, A.F., Stampen, J.L. and Hansen, W.L. (1990). Exploring the effects if ability-to-pay on persistence in college. *Review of Higher Education*, 13(3): 303-336.

Chickering, A.W. and Gamson, Z.F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin 39(7): 3-7.

Feldman, K. and Newcomb, T. (1969). *The impact of college on students*. San Francisco: Jossey-Bass.

Fleming, J. (1984). Blacks in college: A comparative study of students' success in Black and in White institutions. San Francisco: CA.: Jossey-Bass.

Hurtado, S. (1992). The campus racial climate: Contexts of conflict. *Journal of Higher Education*, 63: 539-569.

Hurtado, S. (1994). The institutional climate for talented Latino students. *Research in Higher Education*, 35: 21-41.

Hurtado, S., Carter, D. F. & Spuler, A. (1996). Latino student transition to college: Assessing difficulties and factors in successful college adjustment. *Research of Higher Education*, 37(2): 135-158.

Kuh, G. D., Vesper, N., Connolly, M.R., & Pace, R. C. (1997). *College Student Experiences Questionnaire: Revised norms for the third edition.* Bloomington: Center for Postsecondary Research and Planning, School of Education, Indiana University.

Kuh, G. D., Pace, R. C. & Vesper, N. (1997). The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education*, 38(4): 435-454.

Kuh, G. D., et al. (1994). Student learning outside the classroom: Transcending artificial boundaries. *ASHE-ERIC Higher Education Reports*, 1994(8). Washington DC: The George Washington University.

Loo, C. M. & Rolison, G. (1986). Alienation of ethnic minority students at a predominantly white university. *Journal of Higher Education*, 57: 58-77.

Murguia, E., Padilla, R.V., and Pavel, M. (1991). Ethnicity and the concept of social integration in Tinto's Model of Student Departure. *Journal of College Student Development*, 32: 433-446.

National Center for Education Statistics (1991). Education Counts: An Indicator System to Monitor the Nation's Educational Health. Washington, D.C.: U.S. Government Printing Office.

Nora, A. (1987). Determinants of retention among Chicano student: A structural model. *Research in Higher Education*, 26(1): 31-59.

Nora, A., Attinasi, L.C. and Matonack, A. (1990). Testing qualitative indicators of college factors in Tinto's attrition model: A community college student population. *Review of Higher Education*, 13(3): 337-356.

Nora, A. & Cabrera, A. F. (1993). The construct validity of institutional commitment: A confirmatory factor analysis. *Research in Higher Education*, 34(2): 243-262.

Nora, A. & Cabrera, A. F. (1996). The role of perceptions of prejudice and discrimination on the adjustment of minority students to college. *The Journal of Higher Education*, 67(2): 119-148.

Nora, A., Cabrera, A., Hagedorn, L. S., & Pascarella, E. (1996). Differential impacts of academic and social experiences on college-related behavioral outcomes across different ethnic and gender groups at four-year institutions. *Research in Higher Education*, 37(4): 427-451.

Nettles, M.T., Thoeny, A.R., and Gosman, E.J. (1986). Comparative and Predictive Analyses of Black and White Students' College Achievement and Experiences. *Journal of Higher Education*, 57(3): 289-318.

Pace, C. (1984). *Measuring the quality of college student experiences.* Los Angeles: University of California, Higher Education Research Institute.

Pace, C. (1987). *Good Things Go Together.* Los Angeles: University of California, The Center for the Study of Evaluation, Graduate School of Education.

Pascarella, E. (1985). College environmental influences on learning and cognitive development: A critical review and synthesis. In J. Smart (ed.) *Higher Education: Handbook of Theory and Research I.* New York: Agathon.

Pascarella, E. T., Edison, M., Hagedorn, L.S., Nora, A., and Terenzini, P.T.(1996). Influences on students' internal locus of attribution for academic success in the first year of college. *Research in Higher Education* 37: 731-756.

Pascarella, E.T. and Terenzini, P.T. (1982). Contextual Analysis as A Method for Assessing Residence Group Effects. *Journal of College Student Personnel.* 23: 108-114.

Pascarella, E.T. and Terenzini, P.T. (1991). *How College Affects Students.* San Francisco, CA: Jossey-Bass Inc.

St. John, E. P. (1992). Workable Models for Institutional Research on the Impact of Student Financial Aid. *Journal of Student Financial Aid,* 22(3): 13-26.

Smedley, B. D., Myers, H.F. and Harrell, S. P. (1993). Minority-status stresses and the college adjustment of ethnic minority freshmen. *Journal of Higher Education,* 64: 434-452

Smith, D. G. (1989). *The challenge of diversity: involvement or alienation in the Academy?* In J. D. Fife (ed.) ASHE-ERIC Higher Education Reports (Report # 5). Washington, DC.: The George Washington University Press.

Smith, D. G. (1992). Diversity. In M. A. Whiteley, J. D. Porter and R. H. Fenske (eds), The premier for institutional research. Tallahassee, Florida: Association for Institutional Research Press.

Spady, W. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange,* 1: 64-85.

Spady, W. (1971). Dropouts from higher education: Toward an empirical model. *Interchange,* 2: 38-62.

Suen, H. (1983). Alienation and attrition of Black college students on a predominately White campus. *Journal of College Student Personnel,* 24: 117-121.

Terenzini, P. T., Pascarella, E. T., Theophilides, C., and Lorang, W. (1985). A replication of a path analytic validation of Tinto's theory of college student attrition. *Review of Higher Education,* 8: 319-340.

Terenzini, P. T., Springer, L., Pascarella, E. T., and Nora, A. (1995). Influences affecting the development of students' critical thinking skills. *Research in Higher Education* 36: 23-39.

Terenzini, P. T., Springer, L., Yaeger, P., Pascarella, E. T., and Nora, A.(1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education* 37: 731-756.

Terenzini, P. T., Theophilides, C. & Lorang, W. (1984a). Influences on students' perceptions of their academic skill development during college. *Journal of Higher Education*, 55: 621-636.

Terenzini, P. T., Theophilides, C., & Lorang, W. (1984b). Influences on students' perception of their personal development during the first three years of college. *Research in Higher Education* 21: 178-194.

Terenzini , P. T. and Wright, T. (1987a). Influences on students' academic growth during four years of college. *Research in Higher Education* 26: 161-179.

Terenzini , P. T. and Wright, T. (1987b). Students' personal growth during the first two years of college. *Review of Higher Education* 10: 259-271.

Tinto, V. (1987). *Leaving College: Rethinking the Causes and Cures of Student Attrition.* Chicago: University of Chicago Press.

Tracey, T. J. & Sedlacek, W. E. (1987) Prediction of college graduation using noncognitive variables by race. *Measurement and Evaluation in Guidance.* 19: 177-184.

Tracey, T. J. & Sedlacek, W. E. (1985). The relationship of noncognitive variables to academic success. A longitudinal comparison by race. *Journal of College Student Personnel*, 26: 405-410.

Tracey, T. J. & Sedlacek, W. E. (1984). Noncognitive variables in predicting academic success by race. *Measurement and Evaluation in Guidance*. 16: 171-178.

Volkwein, J.F., King, M., & Terenzini, P. (1986). Student-faculty relationships and intellectual growth among transfer students. *Journal of Higher Education* 57: 413-430.

Volkwein, J.F. (1991). Improved Measures of Academic and Social Integration And Their Association with Measures of Student Growth.. Paper presented at Annual Meeting of the Association for the Study of Higher Education, Boston, MA.

Volkwein, J.F., Carbone, D.A. (1994). The impact of departmental research and teaching climates on undergraduate growth and satisfaction. *Journal of Higher Education*, 65(2): 149-167.

Volkwein, J.F. and Lorang, W. G. (1996). Characteristics of extenders: Full-time students who take light credits loads and graduate in more than four years. *Research in Higher Education*, 37 (1): 43-68.